

10/025903

12/26/01

12/29/00

LG Phillips
Kyo moon

PATENT
8733.542.00

WHAT IS CLAIMED IS:

1. An X-ray detecting device, comprising:

a thin film transistor having a gate electrode, a source electrode and a drain electrode provided on a substrate;

a first protective film covering the thin film transistor;

a first drain contact hole passing through the first protective film;

a second protective film provided on the first protective film;

a second drain contact hole passing through the second protective film centering around the drain contact hole; and

a transparent electrode connected to the drain electrode via the first and second drain contact holes.

2. The X-ray detecting device according to claim 1, wherein the second drain contact hole has a smaller width than the first drain contact hole.

3. The X-ray detecting device according to claim 1, further comprising:

a ground line having the lower electrode of a storage capacitor on the substrate;

a first storage contact hole passing through the first protective film covering the ground line;

a second storage contact hole passing through the second protective film centering

around the first storage contact hole; and

a storage electrode electrically connected to the ground line via the first and second storage contact holes.

4. The X-ray detecting device according to claim 3, wherein the first protective film is made from an inorganic insulating material.

5. The X-ray detecting device according to claim 3, wherein the second protective film is made from an organic insulating material.

6. The X-ray detecting device according to claim 5, further comprising:

a third protective film provided on the second protective film; and

a pixel electrode electrically connected to the drain electrode via a contact hole passing through the third protective film.

7. The X-ray detecting device according to claim 3, further comprising:

a third protective film provided on the second protective film; and

a pixel electrode electrically connected to the drain electrode via a contact hole passing through the third protective film.

8. The X-ray detecting device according to claim 3, wherein the second storage contact hole has a smaller width than the first storage contact hole.

9. A method of fabricating an X-ray detecting device, comprising the steps of:

- providing a gate electrode on a substrate;
- providing a gate insulating film on the substrate;
- providing a semiconductor layer on the gate insulating film;
- providing a source electrode and a drain electrode on the gate insulating film;
- providing a first protective film on the gate insulating film;
- providing a first drain contact hole passing through the first protective film;
- providing a second protective film on the first protective film;
- providing a second drain contact hole passing through the second protective film
centering around the first drain contact hole; and
- providing a transparent electrode on the second protective film.
10. The method according to claim 9, wherein the first drain contact hole has a larger width than the second drain contact hole.
11. The method according to claim 9, further comprising the steps of:
- forming a ground line simultaneously with the source and drain electrodes;
- forming a first storage contact hole passing through the first protective film covering the ground line;
- forming a second storage contact hole passing through the second protective film

centering around the first storage contact hole; and

forming a transparent electrode on the second protective film.

12. The method according to claim 11, further comprising the steps of:

forming a third protective film on the second protective film; and

forming a pixel electrode on the third protective film.

13. The method according to claim 11, wherein the first storage contact hole has a larger width than the second storage contact hole.

14. The method according to claim 11, wherein the first protective film is made from an inorganic insulating material.

15. The method according to claim 11, wherein the second protective film is made from an organic insulating material.

10025903-122601